- ***Potential energy*** stored in pressure vessels, gas tanks, hydraulic or pneumatic systems, and springs (potential energy can be released as hazardous kinetic energy)
- ***Electrical energy*** from generated electrical power, static sources or electrical storage devices (such as batteries or capacitors)
- ***Thermal energy*** (high or low temperature) resulting from mechanical work, radiation, chemical reaction or electrical resistance

Servicing and/or Maintenance Operations

If a servicing activity—such as lubricating, cleaning or unjamming the production equipment—takes place during production, the employee performing the servicing may be subjected to hazards that are not encountered as part of the production operation itself. Workers engaged in these operations are covered by lockout/tagout when any of the following conditions occur:

- The employee must either remove or bypass machine guards or other safety devices, resulting in exposure to hazards at the point of operation;
- The employee is required to place any part of his or her body in contact with the point of operation of the operational machine or piece of equipment; or
- The employee is required to place any part of his or her body into a danger zone associated with a machine operating cycle.

In the above situations, the equipment must be de-energized and locks or tags must be applied to the energy-isolation devices. In addition, when other servicing tasks occur—such as setting up equipment or making significant adjustments to machines — employees performing such tasks are required to lock out or tag out if they can be injured by unexpected energization or startup of the equipment.

OSHA also recognizes that some servicing operations must be performed with the power on. Making many types of fine adjustments, such as centering the belt on conveyors, is one example. Certain aspects of troubleshooting, such as identifying the source of the problem as well as checking to ensure that it has been corrected, is another. OSHA requires the employer to provide effective protection when employees perform such operations. Although, in these cases, a power-on condition is essential either to accomplish the particular type of servicing or to verify that it was performed properly, lockout or tagout procedures are required when other service or maintenance occurs and power is not required.

Provision of the Standard

The standard requires employers to establish procedures for isolating machines or equipment from their source of energy and affixing appropriate locks or tags to energy-isolating devices to prevent any unexpected energization, startup or release of stored energy that could injure workers. When tags are used on energy-isolating devices not capable of being locked out, the employer must provide additional means to ensure a level of protection equivalent to that of locks. The standard also requires the training of employees and periodic inspections of the procedures to maintain or improve their effectiveness.

Energy Control Program

The lockout/tagout rule requires that the employer establish an energy control program that includes 1. documented energy control procedures, 2. an employee training program, and 3. periodic inspections of the use of the procedures. The standard requires employers to establish a program to ensure that machines and equipment are isolated and inoperative before any employee performs servicing or maintenance when the unexpected energization, startup or release of stored energy could occur and cause injury.

The purpose of the energy control program is to ensure that whenever the possibility of unexpected machine or equipment startup or energization exists or when the unexpected release of stored energy could occur and cause injury during servicing and maintenance, the equipment is isolated from its energy source(s) and rendered inoperative prior to servicing or maintenance. Employers have the flexibility to develop programs and procedures that meet the needs of their particular workplace and the particular types of machines and equipment being maintained or serviced.